

Layer Name: DOH Aquifers

Layer Type: Polygon

Status: Complete

Geog. Extent: Islands of Hawaii, Kauai, Lanai, Maui, Molokai and Oahu

Projection: Universal Trans Mercator, Zone 4

Datum: NAD 83 HARN

Description: Aquifers, as determined/defined by DOH, 2011. (Note: DLNR maintains another version of aquifers, which is more administrative in nature, and which has different boundaries than the DOH version, which is more resource-oriented in nature).

The attribute data represent aquifer type codes and status codes that describe an aquifer's geology and status (ie. development stage, utility, salinity, uniqueness, and vulnerability).

Source: Original maps prepared by John F. Mink and L. Stephen Lau, Water Resources Research Center, 1987, for the Department of Health's Groundwater Protection Program in the Safe Drinking Water Branch. Reference: "Aquifer Identification and Classification for O`ahu: Groundwater Protection Strategy for Hawai`i," November 1987. Digitized by DOH - Environmental Planning Office from the original mylars, based on USGS 1:24,000 scale maps.

History: Digitized in 1992 by DOH - Environmental Planning Office, on behalf of the Safe Drinking Water Branch, from the original mylars, based on USGS 1:24,000 scale maps. Converted to shapefiles and consolidated to statewide layer by Statewide GIS staff. Updated by DOH to correct 2 attribute errors, specifically, to correct typea and typeb attribute codes for polygons FID 116 and 119, Kahuku, Oahu, June 2011.

**Citation/Credit should be given to DOH Safe Drinking Water Branch.**

Attributes: Polygons:

AREA	area of polygon (sq. meters)
PERIMETER	perimeter of polygon (meters)
ISLAND	Island Code
SECTOR	Aquifer Sector
SYSTEM	Aquifer System
TYPEA	Aquifer Type (see Note 1, below)
TYPEB	Lower Aquifer Type, when present (see Note 1, below)
STATA	Aquifer Status
STATB	Lower Aquifer Status, when present (see Note 1, below)

*Note: STATUS field value is made up of values for DEV, UTILITY, SALINITY, UNIQUE and VULN*

DEVA	Aquifer Status
UTILITYA	Aquifer Utility
SALINITYA	Aquifer Salinity (mg/l Cl-)
UNIQUEA	Aquifer Uniqueness
VULNA	Aquifer Vulnerability
DEVB	Lower Aquifer Status, when present (see Note 1, below)
UTILITYB	Lower Aquifer Utility, when present (see Note 1, below)
SALINITYB	Lower Aquifer Salinity, when present (see Note 1, below)
UNIQUEB	Lower Aquifer Uniqueness, when present (see Note 1, below)
VULNB	Lower Aquifer Vulnerability, when present (see Note 1, below)

**Attribute Descriptions (Polygons):**

ISL.	SECTOR	SYSTEM
02 Kauai	01 Lihue	01 Koloa
		02 Hanamaulu
		03 Wailua
		04 Anahola
		05 Kilauea
	02 Hanalei	01 Kalihiwai
		02 Hanalei
		03 Wainiha
		04 Napili
	03 Waimea	01 Kekaha
		02 Waimea
		03 Makaweli

		04 Hanapepe
03 Oahu	01 Honolulu	01 Palolo 02 Nuuanu 03 Kalihi 04 Moanalua 05 Waialae
	02 Pearl Harbor	01 Waimalu 02 Waiawa 03 Waipahu 04 Ewa 05 Kunia
	03 Waianae	01 Nanakuli 02 Lualualei 03 Waianae 04 Makaha 05 Keaau
	04 North	01 Mokuleia 02 Waialua 03 Kawaiiloa
	05 Central	01 Wahiawa 02 Koolau
	06 Windward	01 Koolauloa 02 Kahana 03 Koolaupoko 04 Waimanalo
04 Molokai	01 West	01 Kaluakoi 02 Punakou
	02 Central	01 Hoolehua 02 Manawainui 03 Kualapuu
	03 Southeast	01 Kamiloloa 02 Kawela 03 Ualapue 04 Waialua

	04 Northeast	01 Kalaupapa 02 Kahanui 03 Waikolu 04 Haupu 05 Pelekunu 06 Wailau 07 Halawa
05 Lanai	01 Central	01 Windward 02 Leeward
	02 Mahana	01 Hauola 02 Maunalei 03 Lapaiki
	03 Kaa	01 Honopu 02 Kaumalapau
	04 Manele	01 Kealia 02 Manele
06 Maui	01 Wailuku	01 Waikapu 02 Iao 03 Waihee 04 Kahakuloa
	02 Lahaina	01 Honokohau 02 Honolua 03 Honokowai 04 Launiupoko 05 Olowalu 06 Ukumehame
	03 Central	01 Kahului 02 Paia 03 Makawao 04 Kamaole
	04 Koolau	01 Haiku 02 Honopou 03 Waikamoi 04 Keanae
	05 Hana	01 Kuhiwa

		02 Kawaipapa
		03 Waihoi
		04 Kipahulu
	06 Kahikinui	01 Kaupo
		02 Nakuula
		03 Lualailua
08 Hawaii	01 Kohala	01 Hawi
		02 Waimanu
		03 Mahukona
	02 E. Mauna Kea	01 Honokaa
		02 Paauilo
		03 Hakalau
		04 Onomea
	03 W. Mauna Kea	01 Waimea
	04 NE. Mauna Loa	01 Hilo
		02 Keaau
	05 SE. Mauna Loa	01 Olaa
		02 Kapapala
		03 Naalehu
		04 Ka Lae
	06 SW. Mauna Loa	01 Manuka
		02 Kaapuna
		03 Kealakekua
	07 NW. Mauna Loa	01 Anaehoomalu
	08 Kilauea	01 Paho
		02 Kalapana
		03 Hilina
		04 Keaiwa
	09 Hualalai	01 Keauhou
		02 Kiholo

**TYPEA/TYPEB - 3 digit/character code describing aquifer hydrology and geology:**

1st Digit:	Hydrology		
	Value	Definition	Description
	1	Basal	Fresh water in contact with sea water
	2	High Level	Fresh water not in contact with sea water
2nd Digit:	Hydrology		
	Value	Definition	Description
	1	Unconfined	Where water table is upper surface of saturated aquifer
	2	Confined	Aquifer bounded by impermeable or poorly permeable formations, and top of saturated aquifer is below groundwater surface
	3	Confined or Unconfined	Where actual condition is uncertain
3rd Digit:	Geology		
	Value	Definition	Description
	1	Flank	Horizontally extensive lavas
	2	Dike	Aquifers in dike compartments
	3	Flank/Dike	Indistinguishable
	4	Perched	Aquifer on impermeable layer
	5	Dike/Perched	Indistinguishable
	6	Sedimentary	Nonvolcanic lithology

**Status Code (Groundwater) - 5 digit/character code describing aquifer status:**

1st Digit:	<b>Developmental Stage</b>	
	<b>Value</b>	<b>Definition</b>
	1	Currently used
	2	Potential use
	3	No potential use
2nd Digit:	<b>Utility</b>	
	<b>Value</b>	<b>Definition</b>
	1	Drinking
	2	Ecologically important
	3	Neither

**3rd Digit: Salinity (mg/l Cl-)**

<b>Value</b>	<b>Definition</b>
1	Fresh (<250)
2	Low (250-1,000)
3	Moderate (1,000-5,000)
4	High (5,000-15,000)
5	Seawater (>15,000)

**4th Digit: Uniqueness**

<b>Value</b>	<b>Definition</b>
1	Irreplaceable
2	Replaceable

**5th Digit: Vulnerability to Contamination**

<b>Value</b>	<b>Definition</b>
1	High
2	Moderate
3	Low
4	None

## NOTES

### Note 1:

In order to distinguish areas where there are aquifers above other aquifers (such as coastal caprock areas), the fields have been labeled *typea* and *typeb*, and *stata* and *statb*. *Typea* and *stata* represent the upper aquifers, while *typeb* and *statb* represent the lower aquifers, when they occur.

### Note 2:

Although these layers are complete, final QA/QC procedures have not yet been performed. Attribute data on the aquifer codes and status codes were entered manually and are correct to the best of our knowledge.

An explanation of these delineations and protocols can be found in the following documents WRRC documents:

Technical Report No. 179 - Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii. Feb. 1990 (Rev.)

Technical Report No. 185 - Aquifer Identification and Classification for Maui: Groundwater Protection Strategy for Hawaii. Feb. 1990.

Technical Report No. 186 - Aquifer Identification and Classification for Kauai: Groundwater Protection Strategy for Hawaii. Sept. 1992.

Technical Report No. 187 - Aquifer Identification and Classification for Molokai: Groundwater Protection Strategy for Hawaii. Oct. 1992.

Technical Report No. 190 - Aquifer Identification and Classification for Lanai: Groundwater Protection Strategy for Hawaii. April 1993.

Technical Report No. 191 - Aquifer Identification and Classification for the Island of Hawaii: Groundwater Protection Strategy for Hawaii. May 1993.

These technical reports are available from the Groundwater Protection Program, Department of Health. For more information contact DOH, Environmental Planning Office, (808) 586-4337.

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